

Class 3 Permit Modification Request for Mustard Ton Container Baseline Processing Response Comments

Comment 1

Page A-1. The modification description presented in the Executive Summary as being “moderate” is misleading and creates a false impression of the magnitude of the changes in equipment and procedures being sought.

Response 1

The use of the term “moderate” was in reference to required physical changes to the plant and procedures. Process code and Standing Operating Procedures (SOPs) must be revised each time there is a change in the type of munitions or bulk containers being processed. Also, baseline processing only includes ton containers with a liquid agent concentration of mercury of less than one part per million (<1 ppm) so only moderate equipment changes will be implemented.

Comment 2

Page A-2. “Impurities” noted in the introduction are not identified. As far as can be seen from the documentation associated with the MOD request, only higher than 1 ppm Mercury (Hg) concentrations will be attempted to be identified. What are the other “impurities” and how will they impact incineration of the solid phase contained in the Mustard Ton Containers (TCs)?”

Response 2

The mustard agent characterization performed at DCD on 98 ton containers included mustard purity, impurities, metals and headspace gases. This information is located in Appendix E of both the MPF and LIC Trial burn plans which were part of the modification request. The analytical results show that mercury is the primary contaminant of concern. This is why the processing plan focuses on controlling mercury emissions. The results for the other metals will be used to ensure that the other metal feed rates do not exceed the rates demonstrated during the Agent Trial Burns (ATBs).

Comment 3

Page A-2. “The Army and the Division of Solid and Hazardous Waste (Division) should consider the “baseline” and “non-baseline” approaches to mustard agent disposal as a whole, rather than in separate permit modifications. Attempting to separate the mustard stockpile by mercury content-that is, mustard agents containing less than one ppm mercury will be processed by the baseline incineration method while mustard agent with greater than one ppm mercury will be processed in a non-baseline approach-prevents all parties, including citizens, from dealing holistically with safe solutions for the disposal of mustard agents. It may be that the best processing methods for the mustard agent with higher mercury concentrations should also be applied to mustard agents with less mercury. Therefore any approval of this baseline permit modification request should be amended as per recommendations that relate to the upcoming non-baseline permit modification request.”

Response 3

TOCDF has complied with the environmental regulatory requirements associated with permit modifications. If mustard baseline processing can be performed in compliance with the incinerator performance specifications included in the Permit, there is no advantage or reason to hold the Deseret Chemical Depot mustard stockpile in storage while modifications for non-baseline processing are developed.

Additionally, TOCDF made every attempt to involve the public through the preparation and submission of this modification request. Enhanced public participation sessions were held for the mustard strategy, including a detailed discussion of the baseline permit modification and the schedule for upcoming permit documents.

Comment 4

Pages (A-3/ A-4). The Division should require greater explanation of the quality assurance/quality control method and more specific details on the analytical methods for determining mercury concentration in the mustard agent. Any sampling or analytical error in determining the mercury concentration in the mustard agent could result in chronic mis-categorization of the containers.

Response 4

The Mustard Ton Container Sampling Plan will be provided as supplemental information when the draft modification is made available for the 45-day public comment period. This sampling plan provides for the sampling of every mustard ton container in storage at DCD.

Comment 5

Pages A-3 and A-6, Module V(11). Controlling mercury emissions by controlling the feed rate of the mustard agent will do nothing to limit mercury emissions or exposure, or exposure to any toxic emissions associated with mustard agent incineration. It will merely spread out the contamination over a longer period of time.

If the Army has the capacity to use mercury emissions control equipment, and if the Army is committed to operating TOCDF in such a manner that provides maximum protection to workers and the public, it should explain to the Division and to the public why it does not want to use the PAS equipment for the mustard agent with lesser quantities of mercury. For the Army to process mustard agent—even that which contains 1 ppm mercury or less—without Pollution Abatement System (PAS) equipment specifically suited to control mercury, is unacceptable.

Response 5

The TOCDF must comply with the Maximum Available Control Technology (MACT) standards for hazardous waste incinerators that restrict the rate of mercury emissions from the MPF. Mercury emissions were evaluated in the 2003 Human and 2004 Ecological Risk Assessments. The mercury emission rates for the MPF and LICs may be marginally higher (1.4 times) than predicted in the risk assessments but are less than one-half the emission rates

of the GB campaign. The risk assessment's conclusion at these emission rates was no adverse health effects.

Public Law 99-145 requires the U.S. Army to carry out the chemical demilitarization mission while providing maximum protection to the public, the workers and the environment. While the Division reviews permit modifications with this requirement in mind, the Executive Secretary makes determinations on modifications based on the hazardous waste regulations, and not based on this public law.

Comment 6

On Pages A-2 and A-3 (A-4), "The process outlined in the permit modification for accessing and treating heels in the ton containers is unacceptable. The permit modification request notes limitations in the drain tube approach. The Division and the Army should be aware of the risks of feeding chemical warfare items into a furnace with a substantial heel; the 1998 MC-1 bomb incident illustrate these risks quite clearly. Burning ton containers with substantial mustard agent heels, with the added risk of high mercury content and likely concentrations of other heavy metals and toxics, is unsafe."

Response 6

Since the MC-1 event, process control software and the addition and systemization of new process control equipment have given the MPF the ability to safely process charges of waste having heat loads far in excess of that associated with the MC-1 bomb incident.

The ability of a MPF to process heels of agent in excess of 5% was demonstrated by the JACADS 4.2" HD Mortar Trial Burn. A successful DRE for distilled mustard (HD) was demonstrated with a charge weight of 576 pounds (lbs) with a resulting HD feed rate of 640 lbs/hr. No attempt was made to drain the mortars before being fed to the MPF during the ATB (i.e., the mortars fed to the MPF had 100% heels).

Comment 7

On Page (A-5) Module V(1), "Greater feed rates demonstrated for DFS DRE during previous trial burns with agent other than Mustard are not transferable to the Mustard Campaign."

Response 7

The DFS will be used to process explosive components; the agent is removed from the munitions, which at worst will have de minimis amounts of mustard adhering to the munition. See discussion on pages E-14 – E-28.

Successful DREs for Agents GB and VX do not demonstrate the ability of the incinerator to successfully treat mustard; however, the successful demonstration resulting from the DFS Surrogate Trial Burns do, since successful DREs were demonstrated on POHCs having a Class 1 and Class 4 incinerability rankings, meaning they are more difficult to burn than mustard.

Comment 8

On Page A-6, Module V (4), “Identify “previous analyses” used to identify regulated compounds found in Mustard Agent and Spent Decon. Identify the compounds.”

Response 8

The mustard characterization identified in Appendix E of the trial burn plans was used for determination of additional waste codes. The spent decontamination characterization came from lessons learned from JACADS (Chemical Demilitarization Facility located on Johnston Atoll). Chlorobenzene will be spiked in the LIC secondary combustion chamber to demonstrate a Class 1 compound can be thermally treated within the specified limits (DRE 99.99%).

Comment 9

On Page A-6, Module V(6), “Commenters agree with deleting items treated in previous campaigns.

Response 9

Most items treated in previous campaigns have been deleted.

Comment 10

On Page A-6, Module V (7) and Page A-7, Module VI (3) and Module VIII (3) and Page A-8, Attachment 14 (1) (2) (3) (4), “The 5% heel restrictions were placed in the original permit for a reason. It is assumed that reason was to have the furnaces perform specific tasks according to their design capabilities. Removing the 5% heel restriction indicates desired usage of various furnaces (in particular the MPF) for purposes and in a manner not considered in the design.”

Response 10

The 5% heel restriction in the TOCDF Permit was used to establish maximum feed rates. Since that time, the MPF has successfully processed munitions with greater than 5% heels (see response to comment 6). The maximum heel size for the Module V final operating conditions will be determined during the trial burn.

Comment 11

Page A-7, Module VI (2). The Post Trial Burn feed rate should be maintained at 50% of the trial burn demonstrated rates until review and approval of the ATB by the Division.

Response 11

The requirement is 50% of the feed rate until TOCDF has submitted preliminary data to support an increase to 75%. Since the HWC MACT regulations allow owners and operators of incinerators to feed at 100% of the Comprehensive Performance Test (CPT) demonstrated rates, upon submission of the Notification of Compliance (NOC), revised Module V and Attachment 19, the Division intends to allow a 100% feed rate.

Comment 12

Page A-7, Module V (12) and Module X (B)(1). “Lewisite is strictly forbidden from being incinerated in the existing permit. Although Lewisite may be less thermally stable than Mustard, the unknown concentrations, coupled with its being mixed with Mustard and “additional impurities” raises unanswered questions as to its DRE under the proposed action. Therefore, this prohibition should not be revised. Module V.B.1.a.i requires only one chemical agent be fed to the LIC. The presence of unquantified amounts of Lewisite mixed with Mustard violates this requirement.

Response 12

The original permit envisioned that each agent would be treated during a separate agent campaign and that the agents were pure organic compounds. Results of the first mustard Sampling and Analysis (S&A) program showed trace amounts of Lewisite contamination in the DCD Distilled Mustard (HD) stockpile. There would be no additional protection to human health and the environment by separating the trace amounts of Lewisite from the mustard. The processing of trace amount of Lewisite with mustard does not constitute an agent campaign for Lewisite which is what the permit conditions associated with Lewisite were intended to address.

The highest concentration of Lewisite found in the 98 ton containers sampled during the mustard characterization program was 21.8 part per million (ppm). The solid samples were not analyzed for Lewisite but the concentration of arsenic increased with detection of Lewisite in the liquid. Arsenic concentrations in solids will be verified by solids sampling during the shakedown and trial burn operations. Also, maximum feed rates for arsenic will be established by spiking arsenic during the trial burn.

Comment 13

Module V – page 3 (V.A.2.a.). POHC DRE for Mustard in the LIC at 99.9999% is sidestepped via allowance of greater than 5% (up to an undetermined %) to be processed in the MPF which requires only a 99.99% DRE. SIGNIFICANT quantities of Mustard will be permitted to be burned at the lower DRE than were initially intended for the LIC, which was the basis of the higher DRE requirement in this furnace. This MOD therefore circumvents a primary safety and emissions requirement and contradicts the intent of the original permit and the protections incorporated therein.

Response 13

The draft modification has been changed to reflect that, for the MPF, a DRE of 99.9999% will be required if a greater than 5% heel is to be demonstrated during the trial burn.

Comment 14

(Module V – page 10): (V.B.2.i.), “ Commenters seek explanation of the revision switching from negative pressure to sealed system design of the LIC combustion chamber.”

Response 14

This change was originally incorporated into the hazardous waste permit through the RCRA/MACT transition modification (see permit modification request TOCDF-OPLs-02-

0770). The related change proposed for the baseline processing modification was intended to make permit conditions that were already in Module VI consistent with identical conditions that are in Module V.

The use of the sealed system design of the LICs to control fugitive emissions from combustion chamber overpressure events rather than maintaining the combustion zone at negative pressure and incorporating an instantaneous AWFCO was approved by the Environmental Protection Agency (EPA) Region 8 on July 6, 2004 based on the HWC MACT regulations [see 40 CFR 63.1206(c)(5)(A)].

Comment 15

Module V – page 11 (V.B.3). Explain the modifications to the LIC AWFCO contained in Attachment 19, Page 6 regarding the apparent lowering of standards for an AWFCO from specific operating temperatures to “one-hour rolling average”. Commenters infer from this modification that the ability to maintain optimum furnace conditions during Mustard LIC operations is understood to be more challenging than during the GB and VX Campaigns. The modifications to the AWFCO expanded time at temperature indicate variations will be permitted under which incomplete combustion of the POHC will occur.” This comment also applies to Table D-6-2, the MPF AWFCO parameters /set points (Attachment 19, Page 13).

Response 15

The current permit has one-hour rolling averages for the LIC. This parameter was not changed based on the modification request. Incinerator combustion chamber exhaust gas temperature AWFCOs are required to be activated based on hourly rolling averages, rather than instantaneous values by the HWC MACT regulations. TOCDF submitted a permit modification to change the basis of AWFCO activation from instantaneous to rolling averages to avoid having to comply with different operating parameter limits for redundantly regulated operating parameters.

The MPF primary combustion temperature is instantaneous and is not based on a one-hour rolling average. Attachment 19 for the MPF was not changed to one hour rolling averages as requested.

Comment 16

Module V, condition V.C.1 (Pages 12-15). This section allows the TOCDF Mustard Campaign to be conducted contingent on unreliable analysis capabilities; undemonstrated waste characterization capabilities; predicted, but not demonstrated calculations regarding charge weights and charge intervals relying on ATBs that do not necessarily represent direct equivalents to post ATB TC's to be treated in the MPF.

Response 16

The ton sampling program includes sampling of each ton container for mercury since mercury is the limiting factor for feed to the MPF. The commenter is correct that the solid/heels will not have a demonstrated characterization for every ton container. The Division has used the mustard characterization program that included sampling of 98 ton containers at three separate levels, (liquid, non-cohesive and solid layer) to determine a

profile. Further analytical confirmation samples will be taken during shakedown and the trial burn as final operational data is gathered.

Comment 17

The process being proposed for the Mustard Campaign at TOCDF is also known within the Chemical Demilitarization Program as “Modified Baseline”. This approach was attempted at JACADS, resulting in failure of the Trial Burns there. Modified Baseline was also proposed for the Pueblo, Colorado stockpile and abandoned in lieu of community, regulatory and safety considerations. TOCDF, and in particular, the MPF, was not designed to “cook-off” large quantities of solidified Mustard agent in its design, hence the LIC. Based on JACADS performance and subsequent research done within the Chemical Materials Agency, Modified Baseline has been rejected as a viable option for Mustard disposal. Approval of this MOD will, however, permit this approach to be deployed. It is believed that such approval is also a violation of the National Environmental Policy Act (NEPA), as none of the Environmental Impact Statements prepared for the Chemical Demilitarization Program, nor an SSEIS done for TOCDF contemplated nor addressed Modified Baseline as a disposal option.”

Response 17

The facility must demonstrate feed rates and operating parameters during the shakedown period and the trial burn. During shakedown, heel sizes will be evaluated to determine the maximum heel size that can be processed in the MPF, and the maximum heel size will be established in Module V of the Permit. The NEPA comment is not applicable to this modification, but has been addressed per a letter submitted by TOCDF. This letter is enclosed.

Comment 18

“Commenters point to successful completion of operations at Aberdeen (ABCDF) using non-incineration disposal technologies and recommend the Division consider proposing such approaches to CMA for Mustard disposal operations at TOCDF.

Response 18

The hazardous waste rules do not provide a mechanism for the Division to suggest treatment technologies. The Division evaluates technologies to determine if they meet the regulations and are protective of human health and the environment.

Comment 19

“The baseline process as outlined in the permit modification request is inappropriate, especially when safer alternatives are available. The low-temperature, low-pressure neutralization process could include a washout system for the ton containers that would, incidentally, effectively dislodge and neutralize any mustard agent heels. The neutralization process can also effectively capture mercury and other heavy metals, preventing them from being released into the air in an uncontrolled manner. Neutralization of the mustard agent would also eliminate the risk of dioxin formation and release. The “hold, test, release” capability of neutralization means that there would not be uncontrolled release of other toxics including trace amounts of mustard agent. “

Response 19

See response to comment 18.

Comment 20

Some of the changes that may be considered in the “non-baseline” approach may lend to use of neutralization at TOCDF for the entire mustard agent stockpile. In this case the government may be able to save time and money by choosing one process that can treat all of the stockpile, regardless of mercury concentration levels, instead of trying to force the incinerator to perform in a manner that is clearly beyond its design, and will lead to unnecessarily exposing the Utah environment, wildlife and human population to more mercury.

Response 20

See response to comment 18. During the public comment period for the non-baseline ton containers, the public will have an opportunity to comment on the Army’s approach. That modification request has not been submitted to the Executive Secretary to date.

Comment 21

Since the Army has already destroyed the most “risky” nerve agent munitions, there is little storage risk associated with mustard agent. In fact, the amount of time the Army may spend tweaking the incinerator process, and moving to the non-baseline process eventually, may equal or be greater than the amount of time it would take to use a neutralization process of all of the mustard agent.

Response 21

No comment required.

Comment 22

One commenter was concerned about increasing the feed rates. The commenter agreed with disposing of the mustard agent as quickly as possible, but felt public safety is really of far greater concern and importance.

Response 22

The Division will ensure that a treatment process will only be approved if it can be performed in a manner protective of human health and the environment.